Tactical Combat Casualty Care
November 2010

Care Under Fire

Objectives

- **DESCRIBE** the role of firepower supremacy in the prevention of combat trauma.
- **DEMONSTRATE** techniques that can be used to quickly move casualties to cover while the unit is engaged in a firefight
- **EXPLAIN** the rationale for early use of a tourniquet to control life-threatening extremity bleeding during Care Under Fire

Objectives

- **DEMONSTRATE** the appropriate application of the C-A-T to the arm and leg
- **EXPLAIN** why immobilization of the cervical spine is not a critical need in combat casualties with penetrating trauma to the neck.

Care Under Fire Guidelines

1. Return fire and take cover.

2. Direct or expect casualty to remain engaged as a combatant if appropriate.

3. Direct casualty to move to cover and apply self-aid if able.

4. Try to keep the casualty from sustaining additional wounds.

Care Under Fire Guidelines

5. Casualties should be extricated from burning vehicles or buildings and moved to places of relative safety. Do what is necessary to stop the burning process.

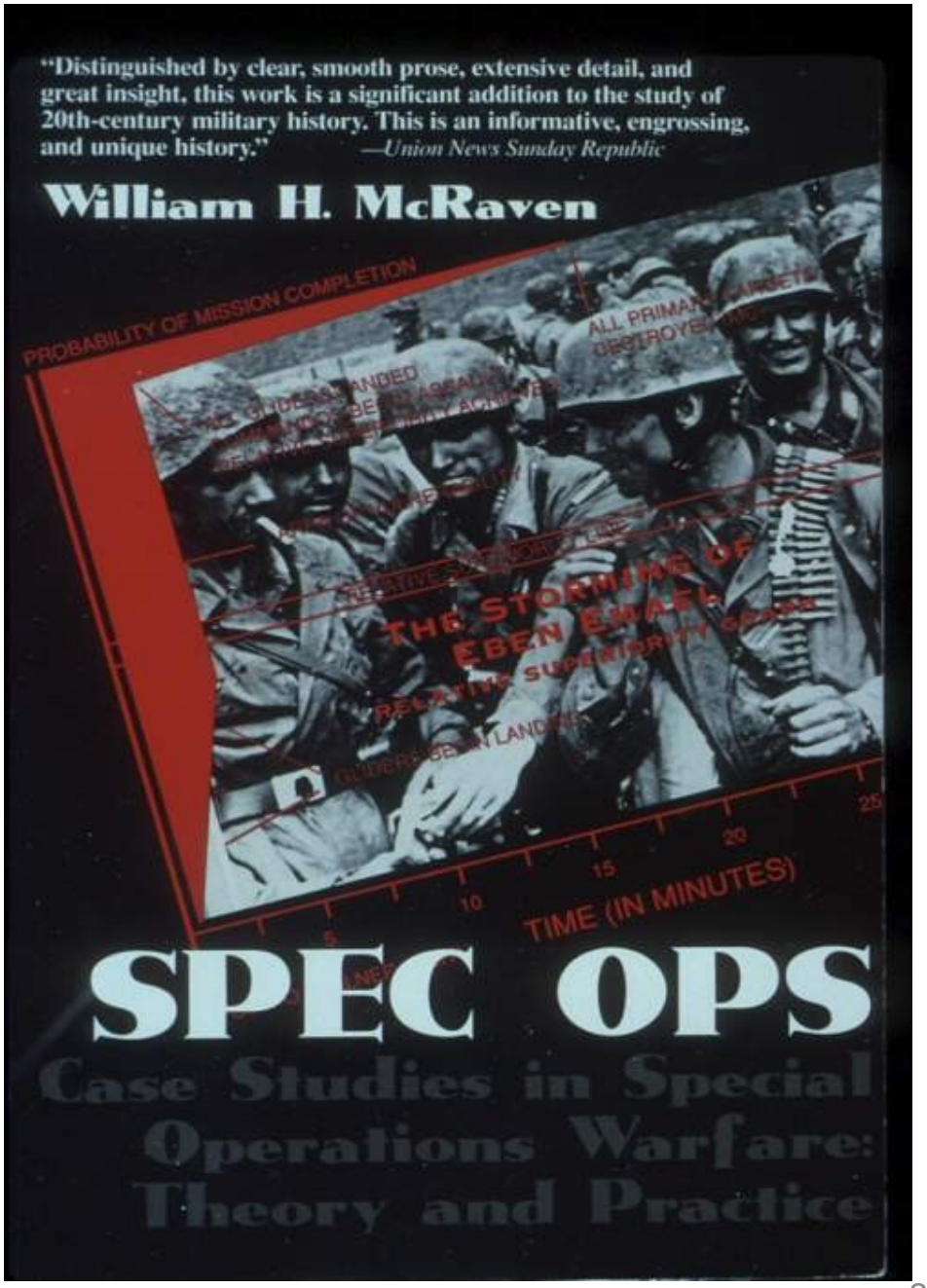
6. Airway management is generally best defe Tactical Field Car

Care Under Fire Guidelines

7. Stop *life-threatening* external hemorrhage if tactically feasible:
   - Direct casualty to control hemorrhage by self-aid if able.
   - Use a CoTCCC-recommended tourniquet for hemorrhage that is anatomically amenable to tourniquet application.
   - Apply the tourniquet proximal to the bleeding site, over the uniform, tighten, and move the casualty to cover.

Care Under Fire

- Prosecuting the mission and caring for the casualties may be in direct conflict.
- What's best for the casualty may NOT be what's best for the mission.
- When there is conflict – which takes precedence?
- Scenario dependent
- Consider the following example


"Distinguished by clear, smooth prose, extensive detail, and great insight, this work is a significant addition to the study of 20th-century military history. This is an informative, engrossing, and unique history." —Union News Sunday Republic
William H. McRaven
PROBABILITY OF MISSION COMPLETION
TIME (IN MINUTES)
SPEC OPS
Case Studies in Special Operations Warfare: Theory and Practice

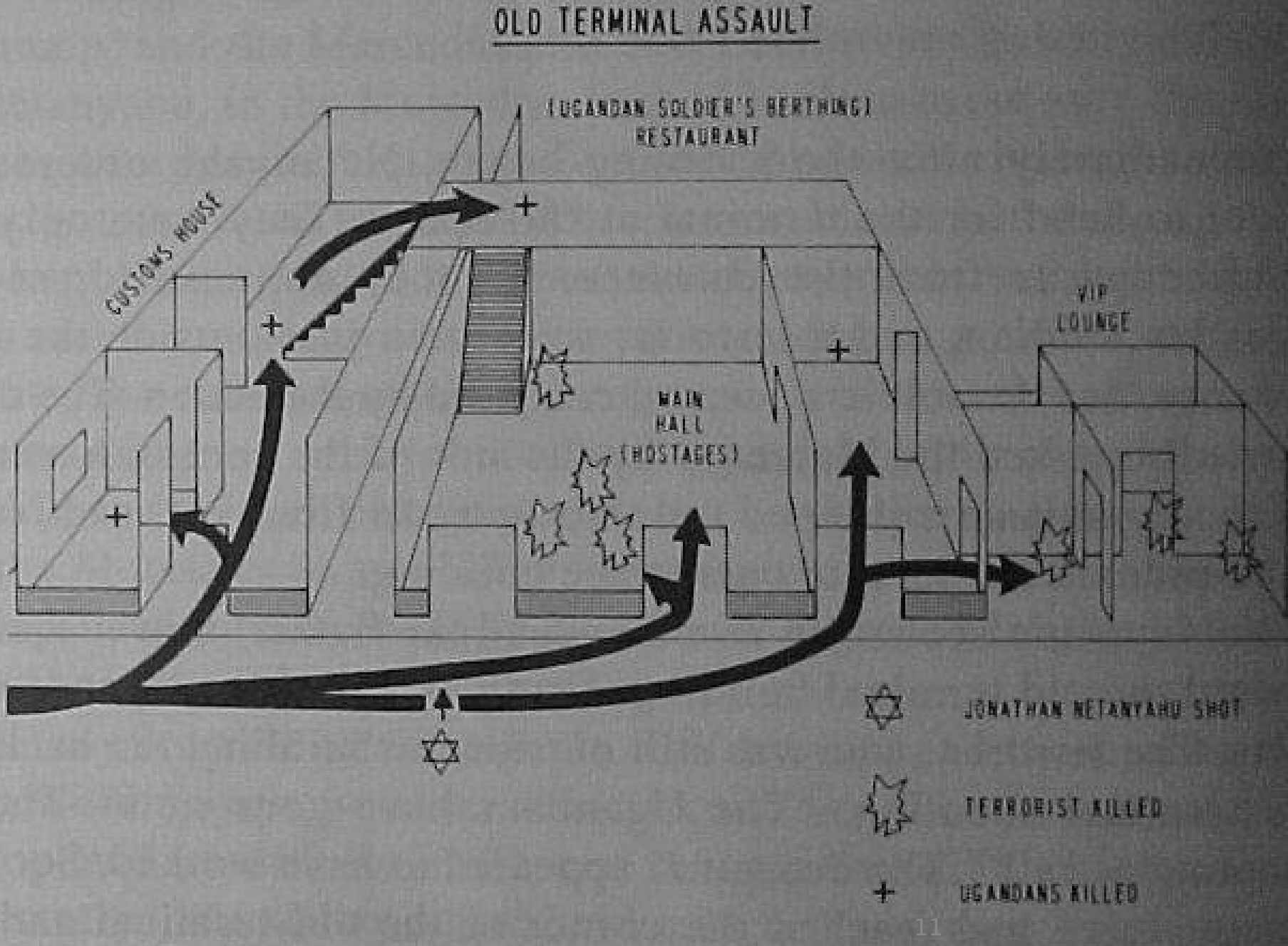
Raid on Entebbe
by VADM Bill McRaven

- 27 June 1976
- Air France Flight 139 hijacked
- Flown to Entebbe (Uganda)
- 106 hostages held in Old Terminal at airport
- 7 terrorists guarding hostages
- 100 Ugandan troops perimeter security
- Israeli commando rescue planned

Raid on Entebbe
by VADM Bill McRaven

Rescue 4 July 1976

- Exit from C-130 in a Mercedes and 2 Land Rovers to mimic mode of travel of Idi Amin – the Ugandan dictator at the time
- Dressed as Ugandan soldiers
- Drove up to the terminal - shot the Ugandan sentry
- Assaulted the terminal through 3 doors


OLD TERMINAL ASSAULT
(UGANDAN SOLDIER'S BERTHING)
RESTAURANT
CUSTOMS HOUSE
VIP
LOUNGE
MAIN
HALL
(HOSTAGES)
JONATHAN NETANYAHU SHOT
TERRORIST KILLED
UGANDANS KILLED

Raid on Entebbe
by VADM Bill McRaven

- LTC Netanyahu – the ground commander – shot in chest at the beginning of the assault
- What should the corpsman or medic do?
  - Disengage from the assault?
  - Start an IV?
  - Immediate needle decompression of chest?

Raid on Entebbe

by VADM Bill McRaven

As previously ordered, the three assault elements disregarded Netanyahu and stormed the building."

"At this point in the operation, there wasn't time to attend to the wounded."

Do seconds really matter in combat?

Ma'a lot Rescue Attempt

by VADM Bill McRaven

- 15 May 1974
- 3 PLO terrorists take 105 hostages
- Schoolchildren and teachers
- When assault commenced, terrorists began killing hostages
- 22 children killed, 56 wounded
- The difference between a dramatic success and a disaster may be measured in seconds.

Care Under Fire

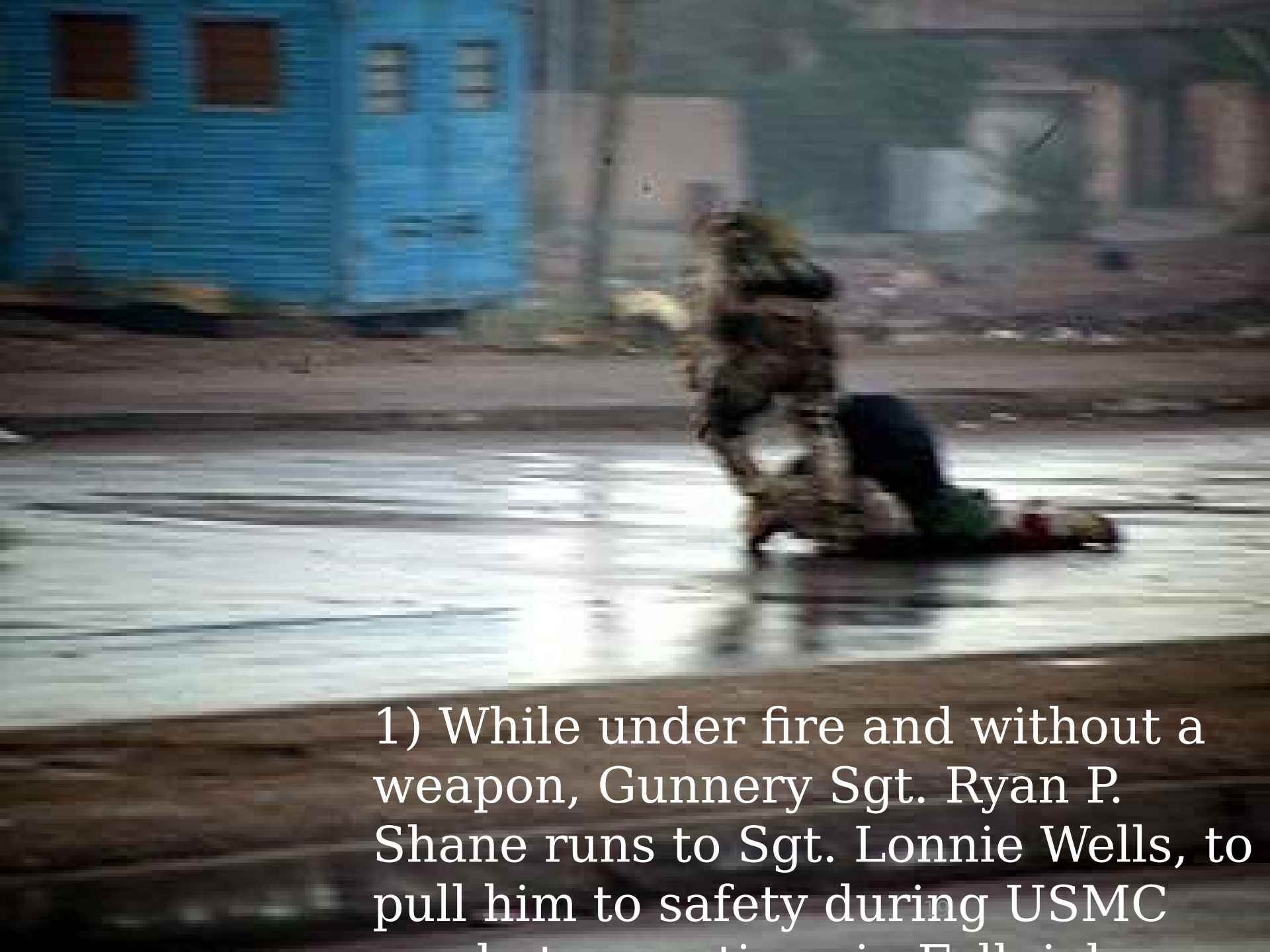
- **If the firefight is ongoing – don't try to treat your casualty in the Kill Zone!**
- Suppression of enemy fire and moving [illegible]over are the major c

Care Under Fire

- Suppression of hostile fire will minimize the risk of both new casualties and additional injuries to the existing casualties.
- The firepower contributed by medical personnel and the casualties themselves may be essential to tactical fire superiority.
- **The best medicine on the battlefield is Fire Superiority.**

Moving Casualties in CUF

- If a casualty is able to move to cover, he should do so to avoid exposing others to enemy fire.
- If casualty is unable to move and unresponsive, the casualty is likely beyond help and moving him while under fire may not be worth the risk.
- If a casualty is responsive but can’t move, a rescue plan should be devised if tactically feasible.



1) While under fire and without a weapon, Gunnery Sgt. Ryan P. Shane runs to Sgt. Lonnie Wells, to pull him to safety during USMC

2) Gunnery Sgt Shane attempts to pull a fatally wounded Sgt Wells to cover.

3) Another Marine comes to help.

4) Gunnery Sgt. Shane (left) is hit by enemy fire.

5) The unidentified Marine heads for cover after Gunnery Sgt Shane, on ground at left, was hit by insurgent sniper fire.

Casualty Movement Rescue Plan

If you must move a casualty under fire, consider the following:

- **Location of nearest cover**
- **How best to move him to the cover**
- **The risk to the rescuers**
- **Weight of casualty and rescuer**
- **Distance to be covered**
- **Use suppression fire and smoke to best advantage!**
- **Recover weapon if possible**

Types of Carries for Care Under Fire

- **One-person drag with/without line**
- **Two-person drag with/without line**
- **SEAL Team Three C**
- **Hawes Carry**

One-Person Drag

ntages: No equipment required

Only one rescuer exposed to fire

vantages: Relatively slow

Not optimal body position for dragging the casualty

Two-Person Drag

antage : **Gets casualty to cover faster than with one-person d**

dvantage: **Exposes two rescuers to hostile fire instead of one**

Video: Two-Person Drag

Two-Person Drag Using Lines

SEAL Team Three Carry

vantages: – May be useful in situations where drags do not work
- Less painful for casualty than dragging

advantages:
- Exposes two rescuers to hostile fire
- May be slower than dragging
- May be difficult in kit and with unconscious casualt

SEAL Team Three Carry (2)

s around shoulders of both rescuers
alty uses arms to hold onto rescuers if able
uers hold casualty's arms around necks if casualty not
rescuers grab casualty's web belt
nd go

Hawes Carry

que: Rescuer squats; arms around neck; lift with legs
ages: One rescuer
May be useful in situations where a drag is not a good
Works much better than outdated fireman's carry
vantages: Hard to accomplish with rescuer and/or casualty's kit
Difficult when rescuer is small and casualty is large
Often slower than dragging
High profile for both rescuer and casualty

Carries Practical

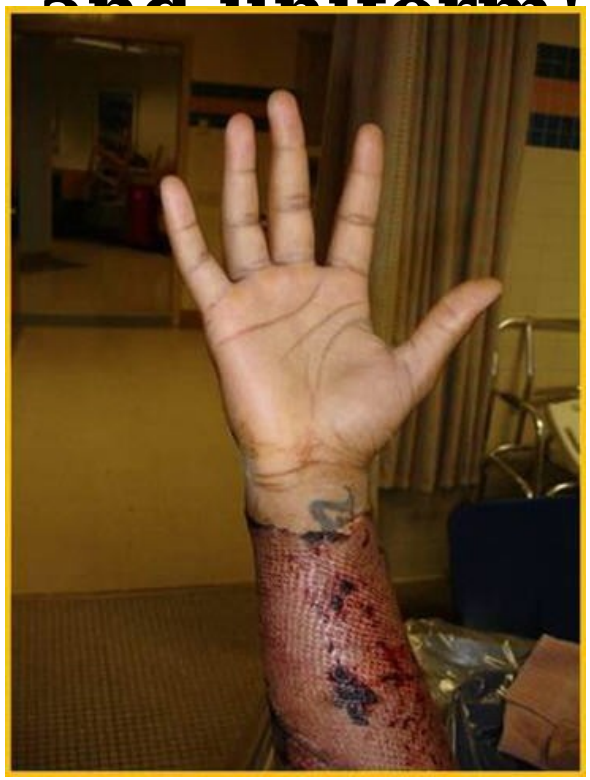
How Not to Do It

Burn Prevention in CUF

- Remove from burning vehicles or structures ASAP and move to cover
- Stop burning with any non-flammable fluids readily
  accessible, smothering, or rolling on ground

Burn Prevention in CUF

Wear fire-retardant Nomex gloves and uniform!



ight hand of burn casualty ared by fire-resistant glove

Fire-Resistant Army Combat Shi

The Number One Medical Priority

Early control of severe hemorrhage is critical.

- **Extremity hemorrhage is the most frequent cause of *preventable* battlefield deaths.**
- Over 2500 deaths occurred in Vietnam secondary to hemorrhage from extremity wounds.
- Injury to a major vessel can quickly lead to shock and death.
- *Only life-threatening bleeding warrants intervention during Care*

Question

- How long does it take to bleed to death from a complete femoral artery and vein disruption?
- Answer:
  - Casualties with such an injury can bleed to death in ***as little as 3 minutes***

Femoral Artery Bleeding

Care Under Fire

The need for immediate access to a tourniquet in such situations makes it clear that all personnel on combat missions should have a CoTCCC-recommended tourniquet readily available at a standard location on their battle gear and be trained in its use.

- Casualties should be able to easily and quickly reach their *own* tourniquet.

Care Under Fire

Where a tourniquet can be applied, it is the *first* choice for hemorrhage control in Care Under Fire.

A Survivable Wound

Did not have an effective tourniquet applied - bled to death from a leg wound

Tourniquet Application

- Apply without delay if indicated
- Both the casualty and the medic are in grave danger while a tourniquet is being applied in this phase – don’t use tourniquets for wounds without significant bleeding
- The decision regarding the relative risk of further injury versus that of bleeding to death must be made by the person rendering care.

Tourniquet Application

- Non-life-threatening bleeding should be **ignored** until the Tactical Field Care phase.
- Apply the tourniquet without removing the uniform – make sure it is clearly proximal to the bleeding site.
- Tighten until bleeding is controlled.
- May need a second tourniquet applied just above the first to control bleeding.
- Don’t put a tourniquet directly over the knee or elbow.
- Don’t put a tourniquet directly over a holster

Anatomy of a C-A-T™

The Combat Application Tourniquet™ (C-A-T™) (Patent Pending) is a small and lightweight one-handed tourniquet that completely occludes arterial blood flow in an extremity.

Combat Application Tourniquet ®
(Pat. Pending)

The C-A-T™ is Delivered in Its One-Handed Configuration

- Free-running end of the Self-Adhering Band passed through the buckle forming a loop for the arm to pass through. This is the

One-Handed Application to Arm

Step 1: Insert the wounded extremity through the loop of the Self-Adhering Band.

One-Handed Application to Arm

Step 2: Pull the Self-Adhering Band tight and securely fasten it back on itself.

One-Handed Application to Arm

Step 3: Adhere the Band tightly around the arm. Do not adhere the band past the clip.

One-Handed Application to Arm

Step 4: Twist the Windlass Rod until bleeding has stopped.

One-Handed Application to Arm

Step 5: Lock the Windlass Rod in place with the Windlass Clip™.

One-Handed Application to Arm

Hemorrhage is now controlled.

One-Handed Application to Arm

Step 6: Adhere the Self-Adhering Band over the Windlass Rod – for small extremities, continue adhering the band around the extremity.

One-Handed Application to Arm

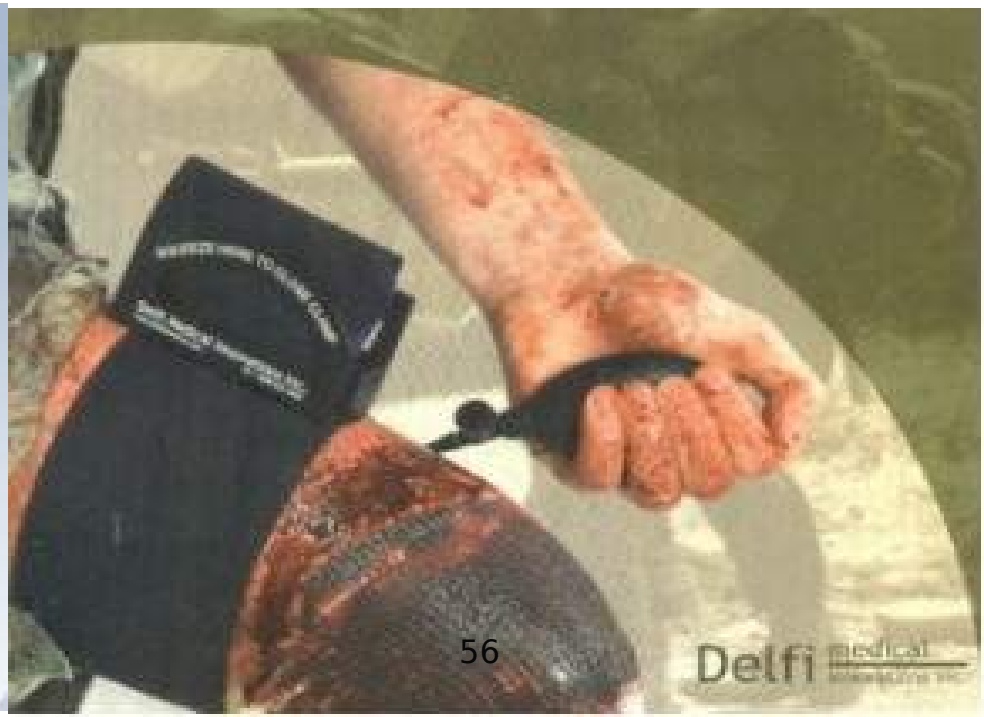
Step 7: Secure the Windlass Rod and Self-Adhering Band with the Windlass Strap – grasp the Windlass Strap and pull it tight, adhering it to the opposite hook on the

Combat Application Tourniquet®
Arm Application

Combat Application Tourniquet ® Leg Application

Other Tourniquets

- SOF Tactical Tourniquet
- Emergency Military Tourniquet



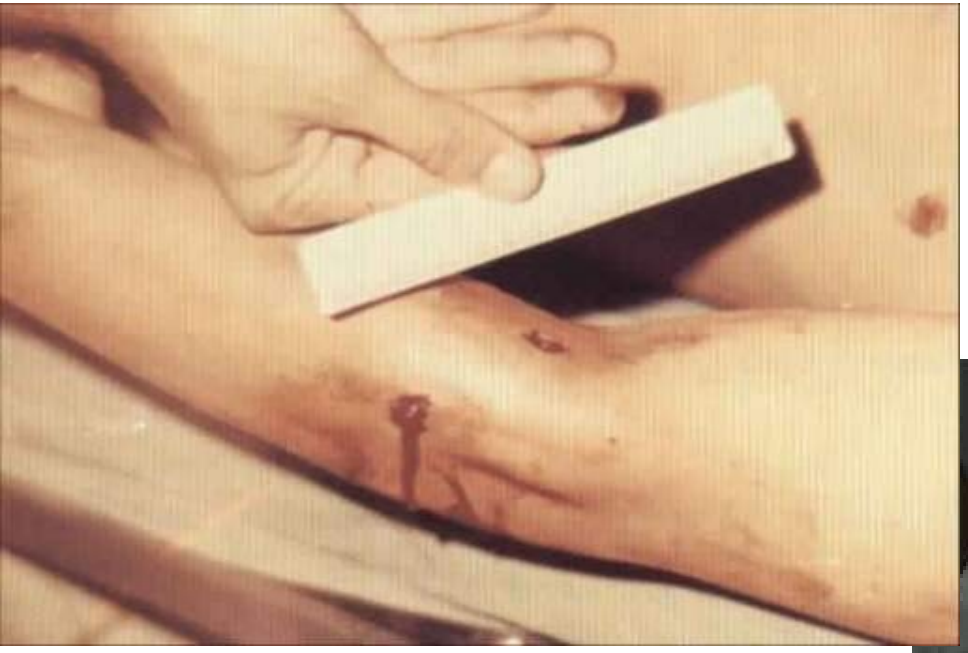
Tourniquets – Kragh et al Annals of Surgery 2009

- Ibn Sina Hospital, Baghdad, 2006
- Tourniquets are saving lives on the battlefield
- **Better survival when tourniquets were applied**
  BEFORE casualties went into shock

al
Journal of Trauma
2008

- Combat Support Hospital in Baghdad
- 232 patients with tourniquets on 309 limbs
- CAT was best field tourniquet
- No amputations caused by tourniquet use
- Approximately 3% transient nerve palsies

Examples of Extremity Wounds That Do NOT Need a Tourniquet



se a tourniquet ONLY for severe bleeding

Tourniquet Mistakes to Avoid!

- Not using one when you should
- Using a tourniquet for minimal bleeding
- Putting it on too proximal
- Not taking it off when indicated during TFC
- Taking it off when the casualty is in shock or has only a short transport time to the hospital
- Not making it tight enough – should eliminate the distal pulse
- Not using a second tourniquet if needed

*These lessons learned have been written in blood. * Wanting too long to put the tourniquet*

Tourniquet Pain

- **Tourniquets HURT when applied effectively**
- **Does not necessarily indicate a mistake in application**
- **Does not mean you should take it off!**
- **Manage p C Guideline**

Questions?

Tourniquet Practical

Hemorrhage Control

- Some wounds are located in places where a tourniquet cannot be applied, such as:
  - Neck
  - Axilla (armpit)
  - Groin
- **The use of a hemostatic agent (e.g., Combat Gauze) is generally not tactically feasible in CUF because of the requirement to**

Airway – Will Cover in TFC

No immediate management of the airway is anticipated while in the Care Under Fire phase.

- Don’t take time to establish an airway while under fire.
- Defer airway management until you have moved casualty to cover.
- Combat deaths from compromised airways are relatively infrequent.
- If casualty has no airway in the Care Under Fire phase, chances for survival are minimal

C-Spine Stabilization

Penetrating head and neck injuries do not require C-spine stabilization

- Gunshot wounds (GSW), shrapnel
- In penetrating trauma, the spinal cord is either already compromised or is in relatively less danger than would be the

C-Spine Stabilization

Blunt trauma is different!

- **Neck or spine injuries due to falls, fast-roping injuries, or motor vehicle accidents may require C-spine stabilization.**
- Apply only if the danger of hostile fire does not constitute a greater threat.

Summary of Key Points

- Return fire and take cover!
- Direct or expect casualty to remain engaged as a combatant if appropriate.
- Direct casualty to move to cover if able.
- Try to keep the casualty from sustaining additional wounds.
- Get casualties out of burning vehicles or buildings.

Summary of Key Points

- Airway management is generally best deferred until the Tactical Field Care phase.
- Stop life-threatening external hemorrhage if tactically feasible.
  - Use a tourniquet for hemorrhage that is anatomically amenable to tourniquet application.
  - Direct casualty to control hemorrhage by self-aid if able.

Questions?

Scenario Based Planning

- If the basic TCCC combat trauma management plan for Care Under Fire doesn’t work for your specific tactical situation – ***then it doesn’t work***.
- Scenario-based planning is critical for success.
- Incorporate likely casualty scenarios into unit mission planning!
- The following is one example

Convoy IED Scenario

Convoy IED Scenario

- Your element is in a five-vehicle convoy moving through a small Iraqi village.
- Command detonated IED explodes under second vehicle.
- Moderate sniper fire
- Rest of the convoy is suppressing sniper fire

Convoy IED Scenario

- You are a medic in the disabled vehicle
- Person next to you has bilateral mid-thigh amputations
- Heavy arterial bleeding from the left stump
- Right stump has only mild oozing of blood

Convoy IED Scenario

- Casualty is conscious and in moderate pain
- Vehicle is not on fire and is right side up
- You are uninjured and able to assist

Convoy IED Scenario

First decision:

- Return fire or treat casualty?
  - Treat immediate threat to life
  - Why?
    - Rest of convoy providing suppressive fire
    - Treatment is effective and QUICK
- First action?
  - Tourniquet on stump with arterial bleed

Convoy IED Scenario

Next action?

- Tourniquet on second stump?
  - Not until Tactical Field Care Phase
  - Not bleeding right now

Next actions?

- Drag casualty out of vehicle and move to best cover
- Return fire if needed
- Communicate info to team leader


Questions?